User Manual
for the
Satellite Terminal

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ABOUT THIS MANUAL

This user manual is intended for the user of the satellite terminal. It provides safety precautions, a description of the satellite terminal and a detailed description of how to use the GUI (Graphical User Interface).

First-line troubleshooting information is also included.

Cautions and symbols

The following symbols appear in this manual:

A caution message indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. It may also refer to a procedure or practice that, if not correctly followed, could result in equipment damage or destruction.

A hint message indicates information for the proper operation of your equipment, including helpful hints, shortcuts or important reminders.

A reference message is used to direct to; an internal reference within the document, a related document or a web-link.

Version History and Applicability

Document version	Date	Software version	Comments
1.0	April 30th 2010	R 1.9.x	Initial version
2.0	August 31st 2010	R 1.9.x	Updated version
3.0	February 2011	R 1.11.x R 2.0.x	Software release update

Related Documentation

- The details of the installation and pointing of the reflector are described in the Point&Play Setup Manual.
- Antenna Pointing Information booklet.

Product Range

TP210 satellite terminal with 75cm antenna.

TP211 satellite terminal with 1m antenna.

IMPORTANT SAFETY PRECAUTIONS

> Install the IPmodem and antenna according to local regulations. For the US market, please visit the Federal Communications Commission's website at www.fcc.gov.

➢ Before installing the IPmodem, please make sure that your electrical outlet is properly wired and your computer equipment is properly grounded. Consult with a licensed electrician if in any doubt;

➢ Please read and understand all operating instructions in your user's guide located in the IPmodem shipping box;

➢ Please read and understand all of the safety precautions set forth in this user manual and in the user's guide prior to connecting any cables to the IPmodem;

➢ Safety and installation rules are given in standards regarding cabled distribution systems for television and interactive multimedia signals EN 50083-1. The installer must follow these rules to be conform to the law. Always implement regulations as issued by national and local authorities.

Warnings

> A warning is defined as a procedure or practice that, if not correctly followed, could result in injury, death, or long term health hazard. **Always observe the following warnings. Not following these cautions will cause the warranty to be invalid.**

➢ There are no user-serviceable parts in the IPmodem. Do not attempt to open the system. There is a risk of electrical shock that may result in injury and death. The IPmodem should only be opened by a technician trained and certified to service the product;

➢ RF radiation hazard: Hazardous electromagnetic field levels are generated in the area between the antenna reflector and the iLNB feed horn during transmission. Do not place any part of your body in that zone while the system is on. Take the necessary precautions to prevent access to the antenna by children or unauthorized persons;

➢ Keep the space between feed horn and reflector clear;

➢ When the IPmodem is powered on, DC voltages are present on the rear panel Tx and Rx connectors;

➢ To prevent the risk of fire or electrical shock, do not expose the indoor equipment to rain, liquids or moisture. Do not place any objects containing liquids (e.g. glasses, vases) on the system;

➢ Do not install the antenna and IPmodem when there is a risk of thunderstorm or lightning activity in the area;

➢ To prevent electrical shock, do not connect the plug into an extension lead (with 1 or more sockets) or other outlet unless the plug can be fully inserted with no part of the pins exposed;

➢ The in-line power supply input power cord must be connected to a properly grounded three-prong AC outlet. Do not use adapter plugs or remove the grounding prong from the plug;

➢ Do not use the in-line power supply power cord when damaged in any way.

Cautions

A caution is defined as a procedure or practice that, if not correctly followed, could result in equipment damage or destruction.
Always observe the following cautions. Not following these cautions will cause the warranty to be invalid.

➢ Always use the in-line power supply with the IPmodem. Using a different power supply may cause equipment damage;

➢ To ensure regulatory and safety compliance, use only the provided power and interface cables or cables which conform to the specifications within this manual;

➢ Do not open the unit. Do not perform any actions other than those contained in the installation and troubleshooting instructions. Refer all servicing to qualified service professionals;

➢ Avoid damaging the IPmodem with static electricity, by first touching the coaxial cable connector when it is attached to the earth grounded coaxial cable wall outlet. Always first touch the coaxial cable connector on the IPmodem when you are disconnecting or re-connecting your Ethernet cable from the IPmodem or your computer;
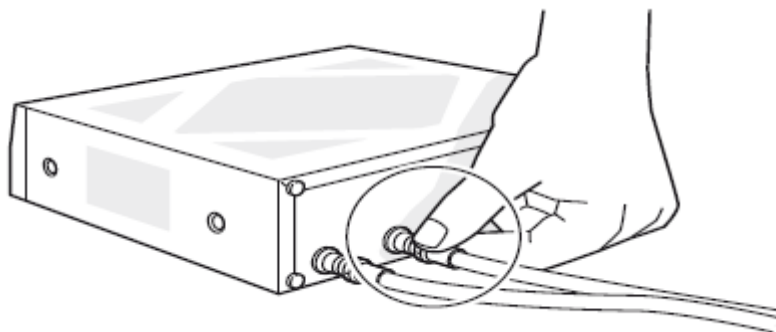
➢ To prevent overheating, do not block the ventilation holes on the sides and top of the IPmodem;

➢ Only wipe the unit with a clean, dry cloth. To avoid equipment damage, never use fluids or similar chemicals. Do not spray cleaners directly on the unit. Do not use compressed air/gas to remove dust;

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> ➢ The user should install an AC surge arrestor in the AC outlet to which this device is connected. This avoids damaging the equipment by local lightning strikes and other electrical surges;

> ➢ Due to the wind pressure equivalent area of the antenna, do not make an installation in bad weather conditions;

> ➢ Secure tight all parts to avoid any potential danger to persons and surroundings;

> ➢ If faced with a critical situation in which personal safety is in jeopardy, do not try to keep hold of the antenna;

> ➢ For safety reasons, ensure that you are not near any power line;

> ➢ Make sure a minimum distance of 6 metres (20 feet) separates the antenna from any power line;

> ➢ Before digging, in case of need for a penetrating antenna mast, contact your local authority to check for information regarding any underground cables and (power) utility line(s).

Notices

> ➢ This product was qualified under test conditions that included the use of the supplied cable between the components. To be in compliance with regulations, the user must use this cable – or equivalent – and install it properly;

> ➢ Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all product safety requirements of the country of use;

> ➢ Installation of this product must be in accordance with national wiring codes.

i In some countries, authorisation is needed for satellite reflector installation. Call your local authorities in case of doubt.

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1 INTRODUCTION

1.1   About the Satellite Terminal

The satellite terminal is state of the art equipment allowing cost effective, plug & play connection to an extended variety of IP-based applications.

 The satellite terminal consists of:

- A small size, high quality, easy to install satellite antenna;
- An iLNB;
- An IPmodem providing an Ethernet connection to the computer of the end-user or Local Area Network (LAN).

The iLNB low power equipment is light weight, easy-to-install and highly reliable. All parts are built using state-of-the-art microwave design that guarantees an unequalled reliability for many years.

Connected to the interactive iLNB by means of transmit and receive cables, the high speed IPmodem provides an asymmetrical 2-way broadband access to IP applications (e.g. Broadband Internet Access). Its small size, in line with the best practice in the telecom and IT industries, makes it suited for any type of user, business or consumer.

1.2   Installation Tasks

To ensure proper installation of the satellite terminal, the installation tasks described in the Point&Play Setup Manual must be followed performed. Please read this Setup Manual carefully during installation.

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2 SATELLITE TERMINAL COMPONENTS

2.1 The IPmodem

2.1.1 The IPmodem Front Panel

Figure 1 – The IPmodem Front Panel

Nr	What	Description
1	Power LED	Green continuous – when powered up.
2	Warning LED	Yellow continuous – when the terminal is not logged on to the satellite network.
3	LAN indicator LEDs	Left: Green continuous – link layer status. Right: Green blinking – Ethernet frames are received or transmitted.
4	Rx indicator LED	Green continuous – forward satellite signalling receiving.
5	Tx indicator LED	Green blinking – traffic transmitting via the satellite link.

Table 1 – Description of the Elements on the IPmodem Front Panel

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2.1.2   The IPmodem Back Panel

Figure 2 – The IPmodem Back Panel

Nr	What	Description
1	Tx connector	Indoor connection for the transmit coax cable.
2	Rx connector	Indoor connection for the receive coax cable.
3	Reset button	Reboot: press once briefly (hold less than 5 seconds); Factory Reset: press and hold for more than 5 seconds. Resetting will also reboot the terminal and change all the IP-settings back to the default factory settings.
4	15V power cable connector	Power connector (5.5/2.5mm plug).
5	Ethernet cable connector	Connection for the LAN, type RJ-45 (Ethernet cable).

Table 2 - Description of the Elements on the IPmodem Back Panel

2.1.3   The Power Supply

Figure 3 - IPmodem Power Supply

- Universal input range: nominal 100 – 240 Volt / 50 – 60 Hz;
- NEMA - IEC320/C8 socket;
- CE approved;

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- Output 15V / 2A;
- Plug 5,5 x 2,5 mm.

2.2 The Pointing Tool

The pointing device, with the functionality as shown in Figure 4, is delivered with an earphone and appropriate battery.

Figure 4 – Pointing Device

Number	Description
1	Connection for the Earphone
2	On/Off and Volume Wheel
3	Connection for Transmit Cable

Table 3 – Description elements of Pointing Tool

The dimensions of the device are:
- Height: 29.02 mm;
- Length: 81.82 mm;
- Width: 61.56 mm.

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2.3   Cables

2.3.1   Ethernet Cables

Included with your Sat3Play Terminal is a crossed red Cat-5 Ethernet cable with RJ-45 connectors. This cable is approximately 2 m long. It is used to connect the IPmodem to your computer.

> The IPmodem Ethernet connection also supports auto cross-over. Hence a straight Ethernet cable also be used

2.3.2   Coaxial Cables

Figure 5 – Coaxial Cables

Delivered with your system is a combined twin Rx/Tx cable with premounted connectors on one end. These coaxial cables are approx 1cm in diameter and have a length of 30 meters.

> Please refer to Appendix F for the cable specifications.

2.4   The iLNB

The iLNB has an integrated casing and is fully sealed except for its ventilation slots.

Figure 6 - iLNB > Perspective and Bottom View

Nr	What	Description
1	Feed horn	Radiating feed horn of the iLNB, pointed towards reflector.
2	Rx connector	Outdoor connection for the receive coax cable.
3	Tx connector	Outdoor connection for the transmit coax cable.
4	Grounding connector	Outdoor connection for the grounding wire

Table 4 - Description Elements of the iLNB

2.5   The antenna

The antenna and masthead are developed for easy assembly and installation with integrated fine-adjustment mechanism.

The antenna is delivered including the masthead, excluding the antenna mast (pole)/mount or wall-mount.

> *i*   Please refer to the Point&Play Setup Manual for the antenna pole requirements.

Figure 7 – Antenna

3 TERMINAL WEB INTERFACE

3.1   Prepare the Settings of Your Computer

Check if your computer is set to DHCP. This way the computer can receive an IP address from the IPmodem.

Follow the procedure in Appendix B – Setting and Changing your IP Settings to check and/or change your IP settings.

3.2   How to Access the Terminal Web Interface?

3.2.1   With Satellite Connection

In the normal operational mode a connected computer should be configured in DHCP mode to retrieve an IP address automatically and to retrieve the DNS server. The IPmodem acts as a DHCP server for the computer.

Browse to the web interface

> ➢ Type the IPmodem's address in the address bar of the browser: 192.168.1.1.

You are re-directed to the Status page of the terminal.

Figure 8 – The IPmodem's Address in the Address bar of the Browser

Alternatively, use the Default Gateway address to reach the web interface. See Appendix A – Local Network Configuration.

It is possible that **during first logon** the IPmodem will perform an upgrade with the latest software since you cannot login using the old SW. This process can take up to **ten minutes**. **You may NOT interrupt the terminal yourself during this period, e.g. by rebooting or powering down.**
If newer software is available, the terminal will:

- Download this software;
- Install this software;
- Reboot the terminal;
- Logon to the network again.

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3.2.2   No Satellite Connection

Make sure your computer is able to receive an IP address via DHCP, by following the procedure described in Appendix B – Setting and Changing your IP Settings.

When the terminal is not linked to the satellite network, after three minutes, the computer will automatically receive its IP address, via DHCP, from the IPmodem and you will then be able to browse the web interface.

If no DHCP address is assigned to your terminal: remove the Ethernet cable from your computer, wait a few seconds, and plug the Ethernet cable back into your computer.

  ➢ Type the IPmodem's address in the address bar of the browser: 192.168.1.1.

You will be redirected to the Status page of the terminal.

If the problem remains, you need to assign a static IP address to your computer by following the procedure in Appendix B – Setting and Changing your IP Settings.

3.3   Overview Web Interface

3.3.1   General Layout

Figure 9 – Page Layout of Web Interface

Each of the web interface pages contains the same elements.

- **A – Banner :** The banner contains the Newtec logo and shows the Air MAC address.
- **B – Status bar :** The status bar always shows the most important status LEDs. This information will be specified in the body of the Status page.

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C – **Menu structure :** On the left hand side of the page the site navigation is found. Click an item to select it. The menu structure may differ d**epending on your logi**n status.

- **D ─ Body :**The actual content of the web interface is shown in the body. It always shows the page title and one or more content blocks or forms.

3.3.2   Menu Structure

The menu structure of the web interface of the web interface is described below (see Figure 10).

- **Status**
  - Check on the device and network status.
- **Configuration**
  - **Ethernet Interface**
    Check and alter the Ethernet interface configuration.
  - **Satellite Interface**
    Check and alter the Satellite interface configuration.
  - **Multicast**
    Check and alter the Multicast configuration.
- **Device Interface**
  - **Software**
    Check on or alter the software version.
  - **Hardware**
    Check the Hardware version.
- **Antenna Pointing**
  - Repoint your antenna
- **Test**
  - Run tests on the device.

Figure 10 - Menu Structure for the User

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3.4   Reboot the IPmodem

See section 2.1.2 for similarities with the hardware button reboot.
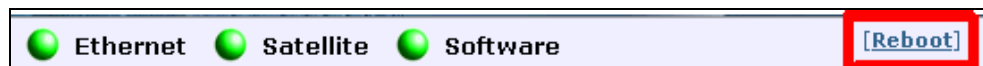
Figure 11 – Location of the Reboot Link

> ➢ Click the [Reboot] link at the right of the status bar to reboot the terminal.

The IPmodem will reboot and return to the Status page. This may take up to one minute, including satellite link initialisation.

The reboot of the IPmodem is needed when a (re)configuration has been performed. Changes may not take effect until after the next reboot.

3.5   LEDs in the Status Bar

3.5.1   Ethernet LED

The **Ethernet** LED gives the general status of the Ethernet connection to the IPmodem.

LED colour code	Description
Red	Connection is not OK.
Yellow	Connection is OK, but no DHCP address is given.
Green	A DHCP address is given and the connection is OK.

Table 5 - Status LEDs > Ethernet

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3.5.2 Satellite LED

The **Satellite** LED gives the general status of the Satellite connection to the IPmodem.

LED colour code	Description
Red	No connectivity, no valid signal received.
Yellow	A valid signal was received. The terminal is busy logging in on the satellite network.
Green	The system is operational and the user is logged in on the satellite network.

Table 6 - Status LEDs > Satellite

3.5.3 Software LED

The **Software** LED gives the general status of the installed software or the updates.

LED colour code	Description
Red	The terminal has a newer software version than the running software version, and The newer software version was not selected because the software validation process failed. See Appendix C – Troubleshooting Guide for possible actions and follow-up.
Yellow	The terminal is retrieving new software via satellite. This can take up to 10 minutes.
Green	No problem. The terminal is running with the latest software version.

Table 7 - Status LEDs > Software

3.6 Status Page

3.6.1 Introduction

In normal operation, when the terminal is pointed and active, there are two parts to the Status Page as shown in Figure 12, which are described in more detail in the following sections:

- Overview;
  This part gives an overview of the IPmodem, demodulator and software state.
- Interface Statistics;
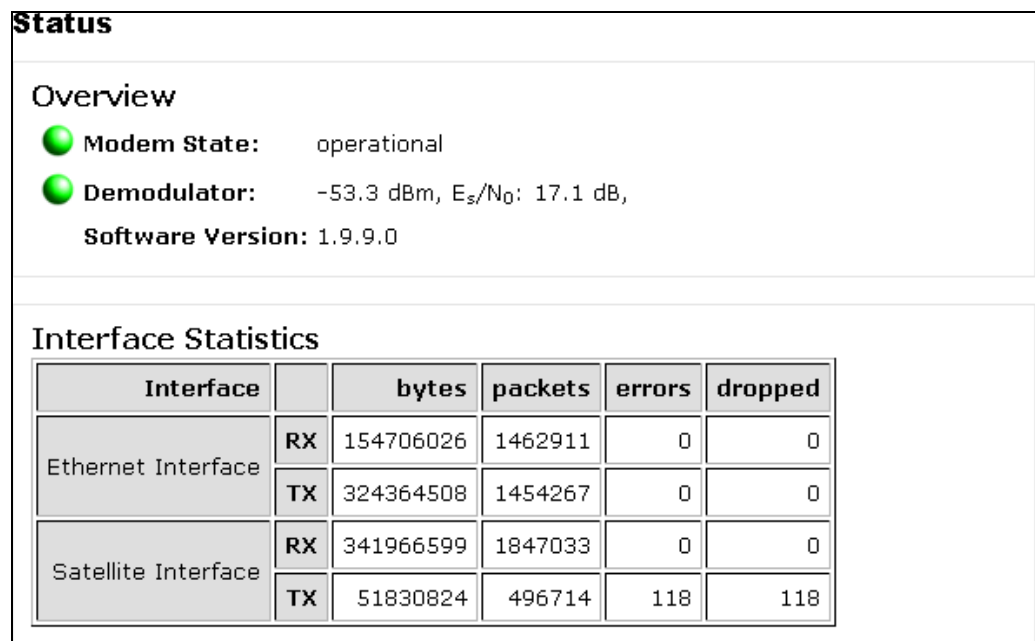 This part gives an overview of the IPmodem statistics.

Status

Overview

🟢 Modem State: operational

🟢 Demodulator: -53.3 dBm, E_s/N_0: 17.1 dB,

   Software Version: 1.9.9.0

Interface Statistics

Interface		bytes	packets	errors	dropped
Ethernet Interface	RX	154706026	1462911	0	0
	TX	324364508	1454267	0	0
Satellite Interface	RX	341966599	1847033	0	0
	TX	51830824	496714	118	118

Figure 12 – Status Page when the Terminal is Pointed

3.6.2   Overview

3.6.2.1   Modem State

The IPmodem state is indicated by a coloured LED and a state description. For the LED colour code, refer to Table 8. The possible modem state descriptions are given below.

Modem state	Colour	Description
Awaiting installer action	Red	The terminal is waiting for an action of the installer.
Satellite network lookup	Red / Yellow	The terminal is looking for the satellite network.
Synchronising	Yellow	The terminal found the satellite network and time synchronisation.
Synchronised	Green	The terminal is synchronised and can directly log in on the satellite network when IP traffic is received via the Ethernet interface.
Network login	Yellow	The terminal is trying to log in on the satellite network.
Operational	Green	The terminal is logged in.

Table 8 - Status Page > Modem State

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3.6.2.2   Demodulator

The Demodulator state is indicated by a coloured LED and a state description.

LED colour code	Description
Green	The demodulator is locked.
Red	The demodulator is not locked.

Table 9 - Status Page > Demodulator LED

The demodulator state is built as follows (see Table 10 for more details):

- *-95.0 dBM, Es/No: 23.2 dB, <Satellite network name>*

Demodulator label value	Description
y dBm	Indication of the received signal strength expressed in dBm. This indication can change when going from pointing mode to operational mode.
Es/No	Es/No is an indication of the received signal quality expressed in dB. This indication can change when going from pointing mode to operational mode.

Table 10 - Status Page > Demodulator Labels

3.6.2.3   Info by Error State

An error message can be displayed. This error message displays the current error status and will be reset when the terminal has entered the satellite network and the terminal is operational.

> Please refer to Appendix C – Troubleshooting Guide for more details on possible errors and actions needed to resolve the occurring error.

3.6.2.4   Software Version

The running software version is indicated by its version number.

3.6.2.5   Pointing

This section of the web interface displays information on the pointing status of the terminal.

The following status can be viewed:

- Status when the antenna is not pointed as shown in Figure 13, giving the option to start pointing or to skip pointing. Where two pointing carriers are available, one can choose the used carrier as shown in Figure 14;
- Status during the pointing of the antenna; see Figure 15. Click on Pointing

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Completed when the antenna is pointed;

- Status when pointed successfully or pointing skipped as shown in Figure 16. This is the status during normal operation of the terminal after pointing.

> *i*   For more details about the functioning of these buttons and navigation between screens refer to the Point&Play Setup Manual for the Satellite Terminal.

Figure 13 - Web Interface > Status when not Pointed – One pointing Carrier

Figure 14 - Web Interface > Status when not Pointed – Two pointing Carriers

Figure 15 - Web Interface > Pointing

Figure 16 - Web Interface > Antenna Pointing > Status when Pointed or Pointing is Skipped

> ⚠   During normal operation the **Restart Pointing** button is shown via the Antenna Pointing button in the menu bar and should only be used in case pointing documentation is available and the antenna must be re-pointed.

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3.6.3 Interface Statistics

Modem state		Description
Interfaces	Ethernet interface	User side interface (Ethernet frames)
	Satellite interface	Satellite side interface (IP packets)
Directions	Rx	Receive
	Tx	Transmit
Statistics	Bytes	Total number of received (or transmitted) bytes
	Packets	Received (or transmitted) Ethernet frames or IP packets
	Errors	Number of occurred errors
	Dropped	Dropped Ethernet frames or IP packets

Table 11 - Status Page > Interface Statistics

3.7 Configuration

> *i* Reboot the IPmodem when a (re)configuration has been performed. Changes may not take effect until after the next reboot.

3.7.1 Ethernet Interface

This section describes the interface between the computer and the IPmodem.

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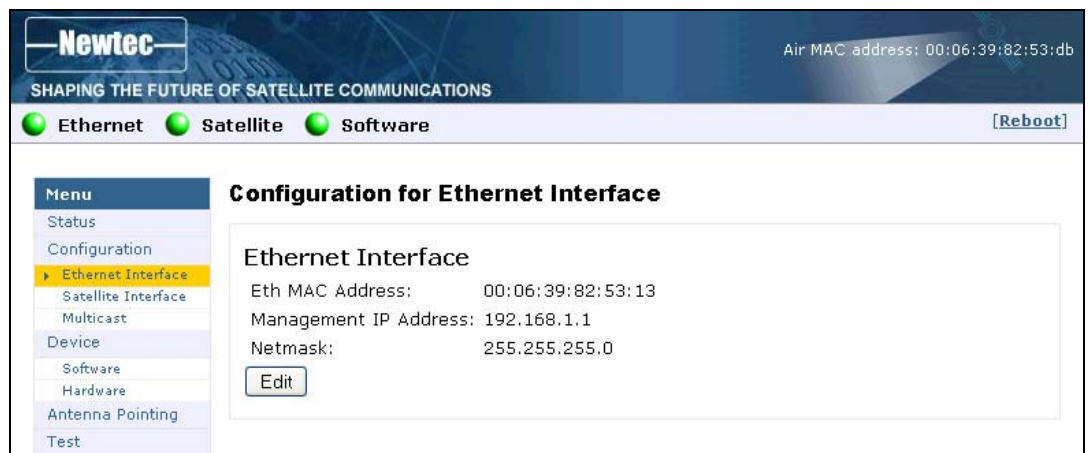#### 3.7.1.1   View the Ethernet Interface Configuration

Figure 17 - Web Interface > View Configuration Ethernet Interface

3.7.1.2   The Parameters of the Ethernet Interface

The displayed parameters and their description are shown below.

Parameter	Description
Eth MAC address	MAC address of the Ethernet interface
Management IP address	Management IP address of the Ethernet interface
Netmask	Network range for the user's LAN

Table 12 - Configuration Page > Ethernet Interface Parameters

3.7.1.3   Modify the Ethernet Interface Configuration
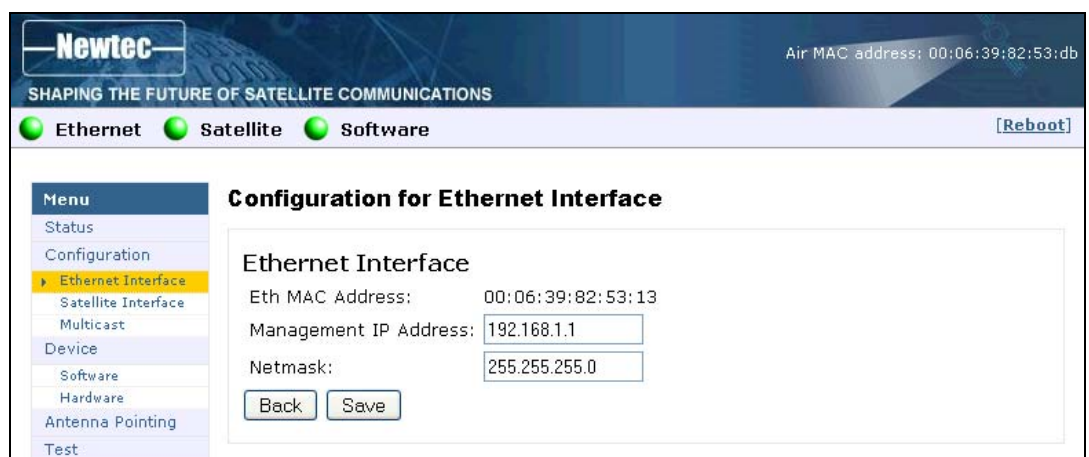

Figure 18 - Web Interface > Edit Configuration Ethernet Interface

> ➢ Click on Edit in the Web Interface > View Configuration Ethernet interface (Figure 17) to change the Ethernet Settings;

> ➢ Edit the parameters to be changed;

> ➢ Click on Save in the Web Interface > Edit Configuration Ethernet interface (Figure 18) to save the new settings.

The Ethernet interface configuration is now saved!

3.7.2   Satellite Interface

> ⚠️ The satellite interface settings are predefined in factory. These settings may only be changed upon advice of your internet service provider!

3.7.2.1   Introduction

This section describes the interface settings between the terminal and the satellite.

Every satellite interface setting consists of:

Initial Receive Carrier

This is the initial receive carrier via which the IPmodem will try to gain access to the network.

Pointing Carrier

This carrier is needed to enable antenna pointing via the Point&Play mechanism. When two different pointing carriers are assigned to the terminal, the installer can perform his pointing on two different pointing carriers. At least one pointing carrier must be enabled.

3.7.2.2   View the Satellite Interface Configuration

Maximum two initial receive carrier settings and pointing carrier settings can be assigned and displayed. Only the settings that are enabled are displayed. How to change the satellite interface configuration is described in section 3.7.2.4.

If two settings for a carrier are enabled and displayed, the preferred initial receive carrier is marked by ✔ .

If two settings for a carrier are enabled and displayed, the default pointing carrier is marked by ✔ The final selection of the pointing carrier that is used for pointing is done in the Status Page as shown in Figure 14, where the non-default pointing carrier can be selected.

In the example of Figure 19, two initial receive carriers and two pointing carriers are enabled. Initial Receive Carrier 2 is marked as preferred, and Pointing Carrier 1 is set as default.

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Configuration for Satellite Interface

Initial Receive Carrier

	Initial Receive Carrier 1	Initial Receive Carrier 2
Preferred:		✔
Transport Mode:	DVB-S2 (CCM)	DVB-S2 (CCM)
Frequency:	11.8450000 GHz	11.2350000 GHz
Symbol Rate:	22.0000 MBaud	30.0000 MBaud

Pointing Carrier

	Pointing Carrier 1	Pointing Carrier 2
Default:	✔	
Transport Mode:	DVB-S2 (CCM)	DVB-S2 (CCM)
Frequency:	10.8912500 GHz	12.5650000 GHz
Symbol Rate:	30.0000 MBaud	27.5000 MBaud
Orbital Position:	39.0° East	23.5° East

[Edit]

Figure 19 - Web Interface > View Configuration Satellite Interface

3.7.2.3 The Parameters of the Satellite Interface

The displayed parameters and their descriptions are shown in the table below.

Parameter	Description
Initial Receive Carrier	
Preferred	Mark for the preferred Initial Receive Carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM); DVB-S2 (Adaptive Coding Modulation – ACM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
Pointing Carrier	
Default	Mark for the default pointing carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM); DVB-S2 (Adaptive Coding Modulation – ACM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
Orbital Position	Orbital position of the satellite in degrees and East/West selection.

Table 13 - Configuration Page > Satellite Interface Parameters > Initial Receive Carrier

3.7.2.4 Edit the Satellite Interface Configuration

➢ Click on [Edit] in the Web Interface > View Satellite Configuration Interface as shown in Figure 19;

➢ Edit the parameters to be changed and as described in Figure 20;

i An initial receive carrier setting or pointing carrier setting can only be enabled if the frequency of the configuration is filled in.

Figure 20 - Web Interface > Edit Configuration Satellite Interface

➢ Click on [Save] in the Web Interface > Edit Configuration Ethernet interface (Figure 20) to save the new settings;

The satellite interface configuration is now saved and the changes in the configuration are displayed.
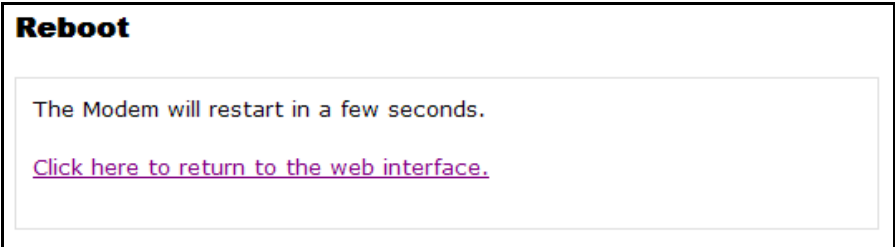
Changing initial carrier 2 frequency from 40000000 to 0.

Changing initial carrier 2 symbol rate from 200000 to 0.

Changing pointing carrier 2 frequency from 110000000 to 0.

Changing pointing carrier 2 symbol rate from 220000 to 0.

The configuration was updated.

Changes may not take effect until after the next reboot.

Figure 21 – Example of Satellite Interface Configuration Changes

> ➢ Click on **reboot** at the bottom of the page;

> ➢ Click on **Normal Reboot** to confirm and execute the reboot;

Reboot

The Modem will restart in a few seconds.

Click here to return to the web interface.

Figure 22 – Reboot in Progress

> ➢ Click on **Click here to return to the web interface** and wait a few minutes;

The satellite interface configuration is now effective.

3.7.3   Multicast

The satellite can send several sessions to a number of satellite terminals at the same time.

This is IPmulticasting. There are two configurations possible in the satellite terminal to receive these programs:

- Static IP addresses: these are IP addresses where the sessions are received. You will be provided with these addresses if needed;
- IGMP: this is a protocol that lets you receive multicast sessions (maximum 10) without entering specific IP addresses.

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3.7.3.1 View the Multicast Configuration

Figure 23 - Web Interface > View Configuration Multicast

3.7.3.2 The Multicast Parameters

The displayed parameters and their description are shown below.

Parameter	Description
Multicast Mode	Disabled: Multicast mode is disabled. Static: The active Multicast Configuration is based on entered Static Multicast IP Addresses. IGMP Dynamic: Dynamic IGMP multicast mode.
Static Multicast IP Address 1-10	Maximum 10 multicast IP Addresses can be assigned and active in case of Static Multicast Mode.

Table 14- Configuration Page > Multicast parameters

3.7.3.3 Edit the Multicast Configuration

Figure 24 – Web Interface > Edit Multicast Configuration

> ➤ Click on Edit in the Web Interface > View Multicast configuration (Figure 23) to Change the Ethernet Settings;

> ➤ Edit the parameters to be changed;

> ➤ Click on Save in the Web Interface > Edit Multicast configuration (Figure 24) to save the new settings.

The Multicast configuration is now saved!

The response screen for a Disabled Multicast configuration:

Figure 25 – Web Interface > Confirmation of Disabled Multicast Configuration

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In case an invalid multicast IP address is replacing a valid multicast IP address, the last valid multicast IP address will still be in use.

The response screen for a Committed Multicast configuration:
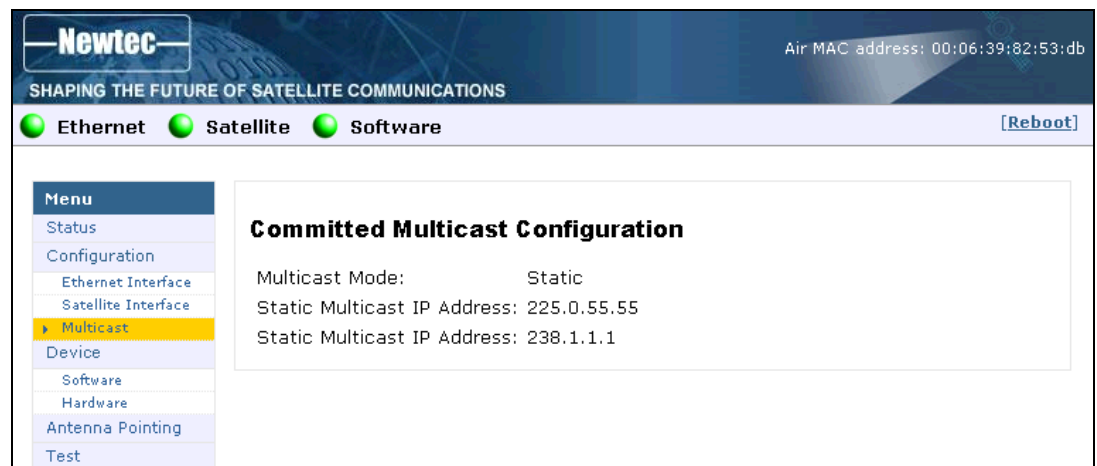
Figure 26 – Web Interface > Confirmation Committed Multicast Configuration

3.8   Device

3.8.1   Software

3.8.1.1   Introduction – General Case

The terminal software is automatically upgraded over the satellite without any user interaction. In general, the only requirement for an upgrade to be successful is for the terminal to have satellite connectivity during the time of upgrade.

To allow a secure terminal software upgrade mechanism, the flash memory of the modem can contain two different software versions. A newly installed software version has to pass an automatic software validation procedure. After a software upgrade, the IPmodem is automatically reset.
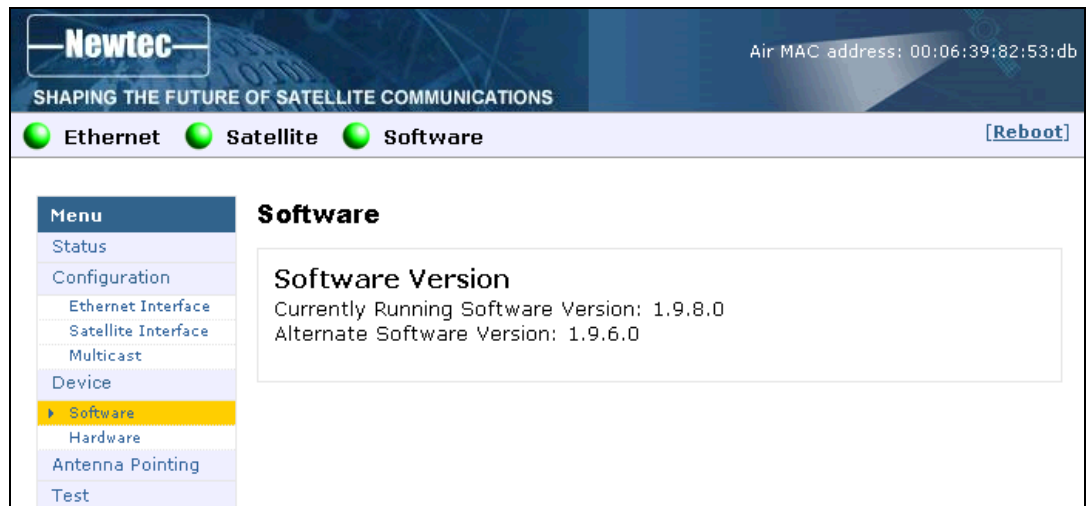
Figure 27 - Web Interface > View Software Configuration

Table 15 gives a description of the parameters in the Software menu:

Parameter	Description
Software version	
Currently Running Software Version	The currently installed software version is displayed. When an alternate software version is available, you will be provided with a link Try Alternate Version.
Alternate Software Version	Only displayed when an alternative software version is present.

Table 15 - Software Page

3.8.1.2   Software Upgrade

A newly installed software version must pass an automatic software validation procedure. When this software validation process fails, the old software version remains in use. The passive memory bank now contains a newer software version that did not pass the validation process. In this case, the user has the possibility to re-trigger the validation process. This situation can occur when a user turns off his IPmodem during the validation process or when satellite connectivity was not possible to establish during the validation process.

> It is possible that the terminal performs a **software update** during the first logon. This process can take **up to ten minutes**. You may **NOT interrupt** the terminal yourself during this period by e.g. rebooting or powering down.
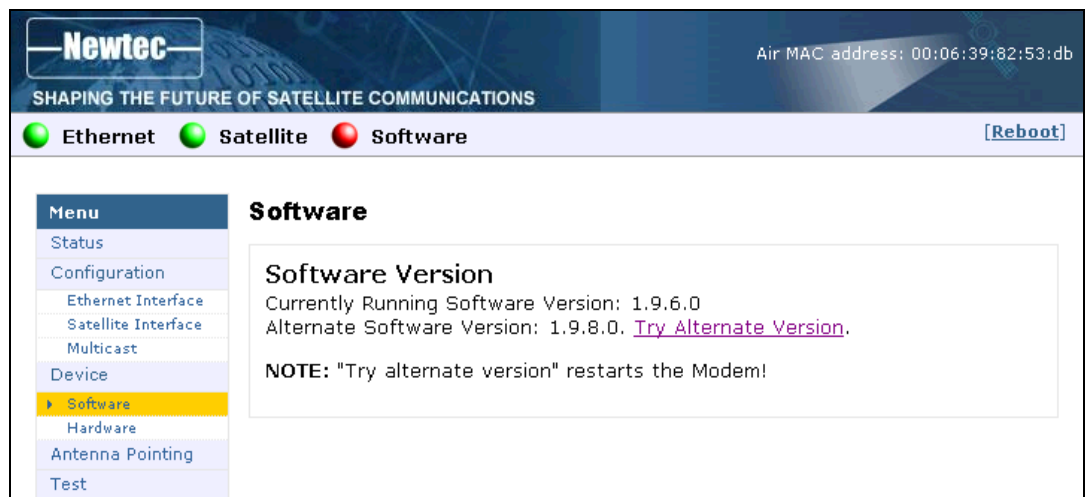
Figure 28 - Web Interface > Software (Alternate Version)

To re-trigger the validation process:

➤ Click the link **Try Alternate Version**;

The *Software Upgrade page* will be displayed indicating the new software version number (see below).

➤ If the web interface doesn't refresh automatically, navigate back to the *Status page*.

A total reboot, including satellite link initialisation might take up to 10 minutes.

Figure 29 - Web Interface > Software Upgrade Confirmation

> When a newer version is present and validation fails, the software LED is red.
>
> Refer to section 3.5 for more information on the meaning of the software status LEDs.

3.8.2   Hardware

Figure 30 - Web Interface > Hardware

Below are given the displayed parameters and their description. These values are read only.

Parameter	Description
Device	
Hardware ID	Hardware identifier of the modem
Hardware Version	Hardware version number of the modem

Table 16 - Configuration Page > View Hardware Parameters

3.9   Antenna Pointing

Figure 31 – Antenna Pointing

In case the antenna should be re-pointed click the [Restart Pointing] button.

The pointing procedure is described in the Point&Play Setup Manual for the Satellite Terminal.
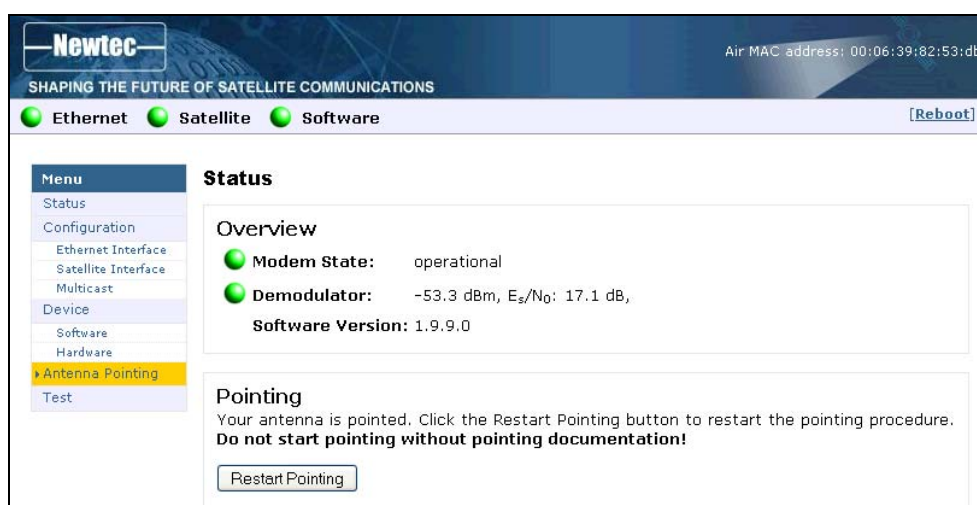
The GUI interface is described in paragraph 3.6.2.5.

3.10 Test

To view the functioning status of the satellite terminal, or to identify problems that may occur, several tests can be run on the terminal:

Tests

Hardware test
- iLNB current measurement test   not executed

Software test
- Software test   not executed

Ethernet/LAN test
- Ethernet test   not executed
- Number of TCP Sessions   not executed

Satellite connection test
- Physical layer test   not executed
- Data link layer test   not executed
- Network layer test   not executed

Traffic test
- Ping traffic test   not executed

  Ping packet size (bytes):   64

  Number of pings: 1

- DNS traffic test   not executed
- Http GET traffic test   not executed

  [Start test]

Figure 32 – Web Interface > Test Overview

> ⓘ The list of available tests depends upon the hardware version of the terminal and can therefore slightly differ from what is shown in figure 32.

version 3.0

3.10.1 Test Descriptions

3.10.1.1 Hardware Test

The Hardware test verifies the proper functioning of the iLNB by measuring the current in the receive and transmit path between the IPmodem and the iLNB.

Possible test results (see also paragraph 3.10.2):

➢ A successful hardware test means that both the Rx and Tx current are within the expected range;

➢ A failed hardware test means that at least one of the measured currents falls outside the expected range. This indicates a problem in the receive and/or transmit path. Figure 33 shows an example where an error occurred in the receive path.

Figure 33 - Failed Hardware test

> ⓘ If the hardware test has failed, please always verify the installation of the coaxial cable. A defect cable, swapped Tx and Rx cables, or loose contacts at one or more connectors can cause the hardware test to fail even if the iLNB itself is working correctly.

In some cases, the hardware test cannot be executed because of the actual modem state. In this case, one is requested to try again later (see Figure 34).

Figure 34 - Hardware test not executable

3.10.1.2 Software Test

The Software test verifies the validity of the software.

3.10.1.3 Ethernet/LAN Test

The Ethernet/LAN test is composed of two tests:
- The "Ethernet test" exists of three tasks:

  ➢ Checking the Ethernet physical layer;

  ➢ Obtaining the IP address off the computer connected to the IPmodem;

  ➢ Checking the IP address of the computer, provided via DHCP by the IPmodem.

version 3.0

- The "Number of TCP sessions" shows how many TCP sessions are currently active. The maximum number of simultaneous TCP sessions is 100. Consequently, if this number is exceeded, TCP sessions will be delayed until the number drops again below 100 (see Figure 35).

```
Ethernet/LAN test
  ☐ Ethernet test                          not executed
  ☑ Number of TCP Sessions                 ❌
                                           Maximum number of TCP sessions exceeded
                                           TCP Sessions: 110/100
```

Figure 35 - Number of TCP sessions exceeded

3.10.1.4 Satellite Connection Test

The Satellite connection test is composed of three tests:
- The Physical layer test, checks if the physical layer of the IPmodem – satellite connection is able to receive data;
- The Data link layer test, checks if the system is able to send data to the satellite;
- The Network layer test, checks the IP connection.

3.10.1.5 Traffic Test

The Traffic test is composed of three tests:
- A ping traffic test, tests if ping packets can be transported over the network from the IPmodem, over the satellite to the hub site;

  The following fields can be filled in:

  – Ping packet size (bytes): minimum 1 and maximum 65,507 bytes;
  – Number of pings: minimum 1 and maximum 100.

- The DNS traffic test resolves a URL via a name server at the hub site;
- The Http GET traffic test verifies the TCP acceleration and pre-fetching.

> ℹ️ The Http GET traffic test uses a TCP connection and can hence not be executed when the maximum number of TCP sessions is exceeded (see section 3.10.1.3). In this case the Http GET traffic test will time out or should be stopped manually.

3.10.2 On Screen Test Results

Mark (☑) or unmark (☐) a test depending on the tests to be run./

Section 3.10.1 gives a description of the tests which can be performed.

Click on the Start test -button to begin the test.

As a result, a screen with the requested test results will be shown, see Table 17.

Running test	⟳
Test waiting to run	◇
Successful test	✔
Unsuccessful test	✖

Table 17 – Possible States of IPmodem Test

Figure 36 – On-Screen Test Results

3.10.3   Filed Test Results

Click on the [Export to text file] -button to export the file. As a result, a web page with the test results in text format will be provided. The test results can now be saved in a text file from the browser, as shown in Figure 34.


```
http://192.1..._test_report    ＋

+++++++++++++
+TEST REPORT+
+++++++++++++


=========================
 Terminal identification
=========================
Air MAC address            : 00:06:39:82:53:db
Hardware Id                : NTC/2252
Serial number              : 00081090-111
Production plant           : 10
Production serial          : 30038504
Production date            : 006
sig_verification           : ok
pkcert                     : ok
Uptime                     : 11:10:40 up 22:09, load average: 0.47, 0.22, 0.08


==================
 Terminal Status
==================
Ethernet Interface State   : GREEN
Satellite Interface State  : GREEN
Software state             : GREEN
Modem State                : operational
Error State                :
Software Version           : 1.9.8.0


========================
 Terminal Configuration
========================
 1. Ethernet
Eth MAC Address            : 00:06:39:82:53:13
Management IP Address      : 192.168.1.1
Netmask                    : 255.255.255.0

 2. Satellite interface - Initial Receive transponders
Preferred transponder      : 1
TRANSPONDER 1
Transport Mode             : DVB-S2 (CCM)
Frequency                  : 10.9500000 GHz
```

Figure 37 – Web Interface > Test > Export to Text File

4 APPENDIX A – LOCAL NETWORK CONFIGURATION

The following provides an overview of IP network configurations. The situation is explained for connecting a single computer to the IPmodem or for connecting a router with its own LAN to the IPmodem.

To correctly interpret the figures, keep in mind the following convention:

○ Private IP address
● Public IP address

4.1   Connect a Single Computer to the IPmodem

Once the computer is connected to the IPmodem's Ethernet interface, set the computer's IP settings to **DHCP enable**.

> *i*   Please refer to Appendix B – Setting and Changing your IP Settings for a detailed explanation on how to change the IP settings.
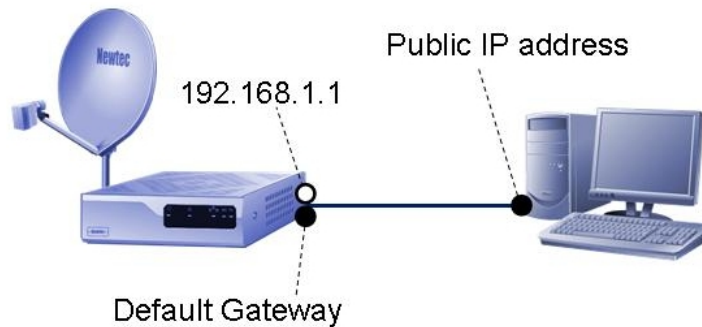
The IPmodem web interface can be reached on:
- 192.168.1.1 (default web interface address);
- The Default Gateway address.

> ⚠ **Important**
> We recommend using a Software fire-wall on the computer which is connected to the IPmodem.
> To know the Default Gateway address on a Windows system, type the ipconfig command in the command line interface.

4.2 Connect a LAN to the IPmodem

To connect the IPmodem to a network, a router is needed. The IPmodem has to be connected to the Internet/WAN interface of the router. In the router configuration, the Internet/WAN interface must be set to DHCP mode. Please refer to the router's manual for a description of how to set the Internet interface to DHCP mode and how to connect the router to your LAN (local area network).

i Please refer to Appendix B – Setting and Changing your IP Settings for a detailed explanation on how to change the IP settings
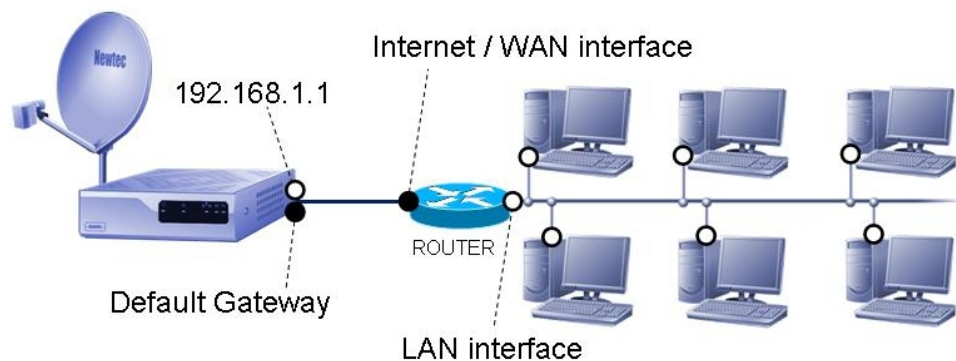
Important

The IPmodem web interface is accessible through the IPmodem default gateway. The IPmodem default gateway address can be looked up through the router's web interface.

Please refer to your router's manual for a description of how to look up the default gateway address.

version 3.0

5 APPENDIX B – SETTING AND CHANGING YOUR IP SETTINGS

The sections also describe how to change your IP settings to enable your computer to accept an IP address assigned by the IPmodem.

5.1 Windows 7

➢ Open the **Start Menu** and select **Control Panel**;
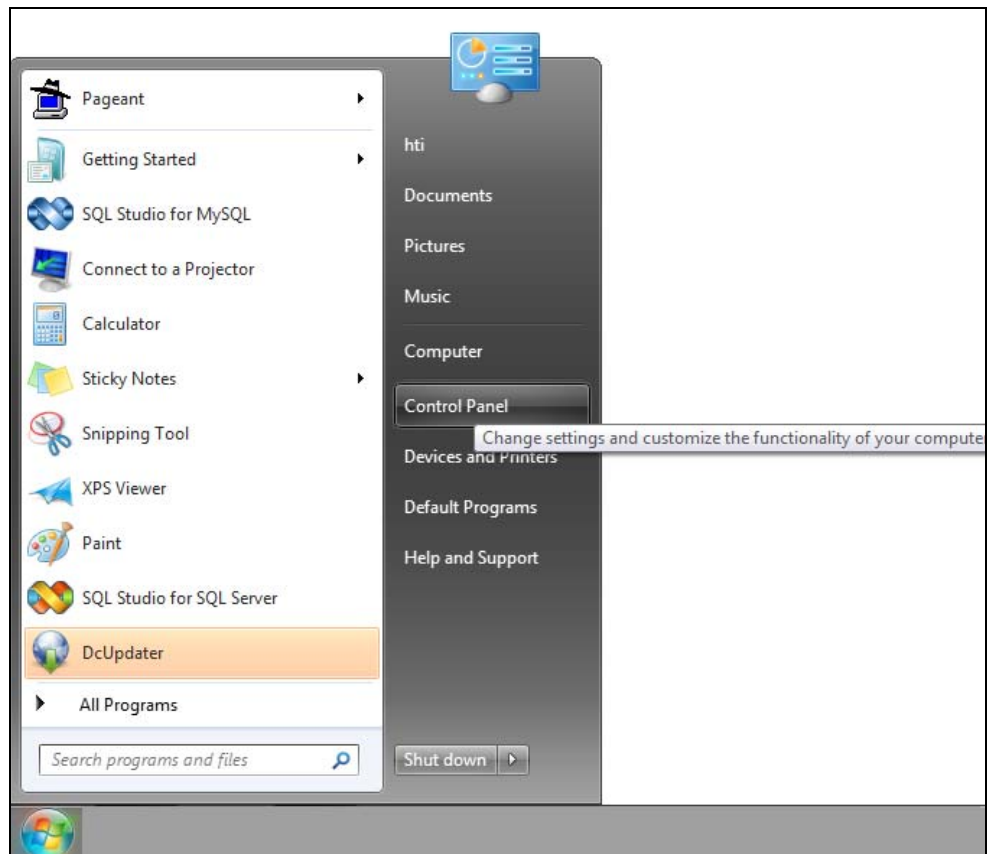
➢   Select the option **View network status and tasks**;
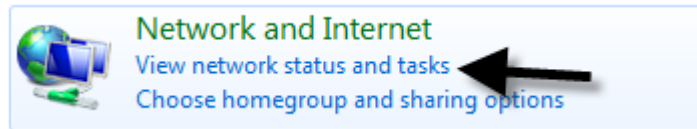
➢ Select the option **View network status and tasks**;

➢ Select the option **Local Area Connection**;

➢   Select the button **Properties** at the bottom;
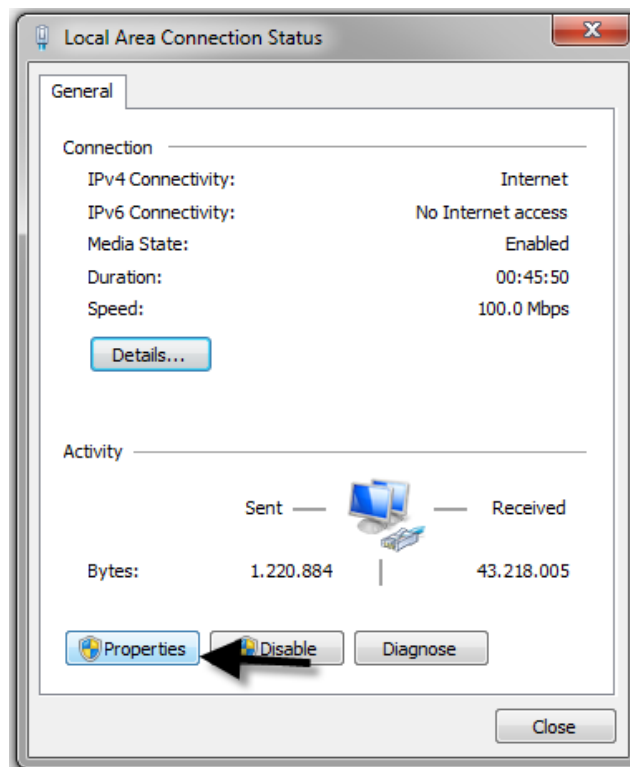
version 3.0

> ➢ Select **Internet Protocol Version 4 (TCP/IPv4)**;
>
> ➢ Select **Properties**;

➢ In the General-tab, make sure "**Obtain an IP address automatically'** and **Obtain DNS server address automatically** are selected.
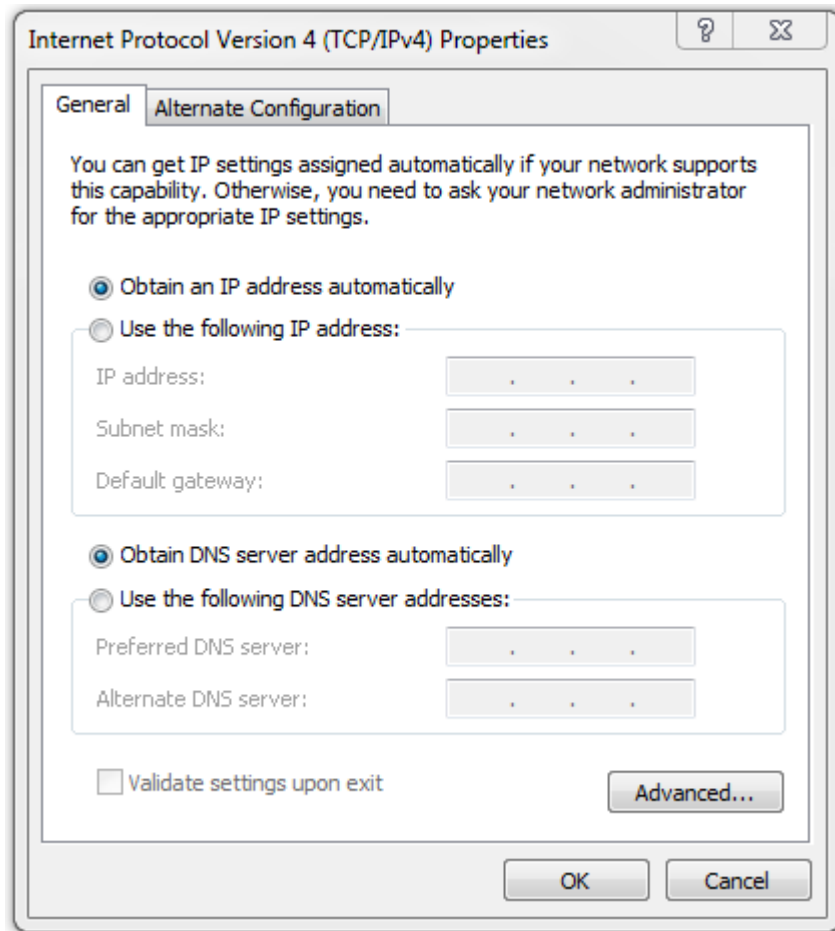
5.2   Windows Vista

➢   Open the **Start Menu** and select **Control Panel**;
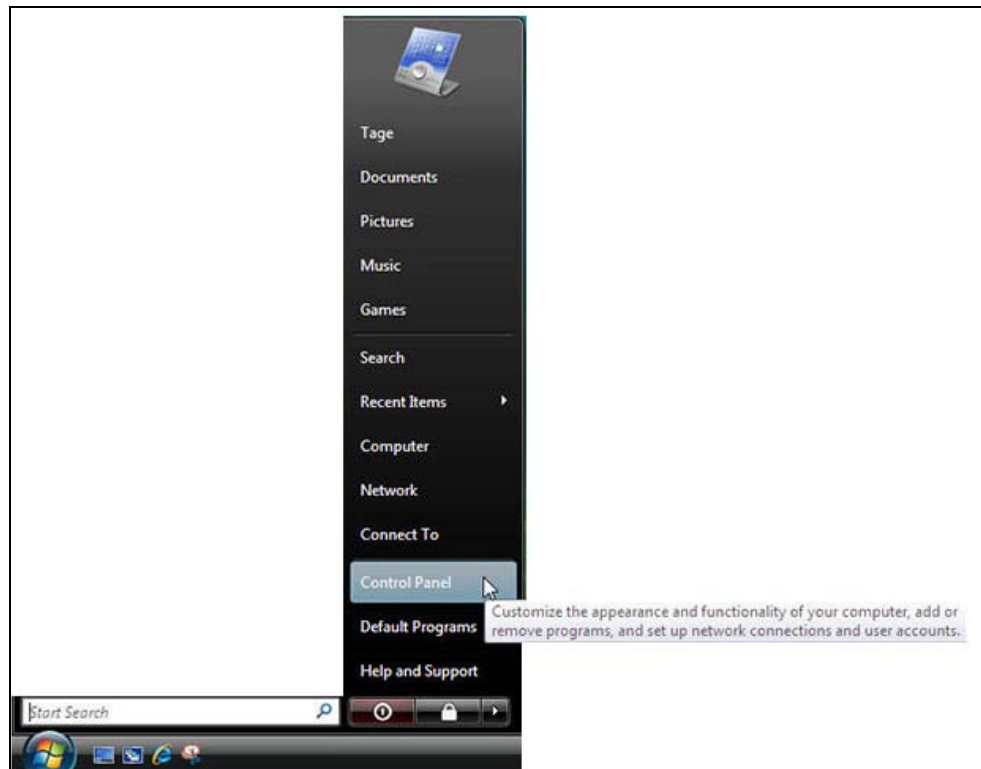
➢   Select the option **View network status and tasks**;
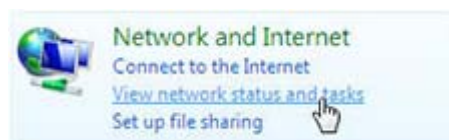
➢   Select **Manage network Connections**;
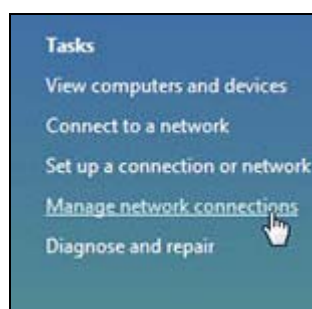
➢   Double click on **Local Area Connection**;

version 3.0

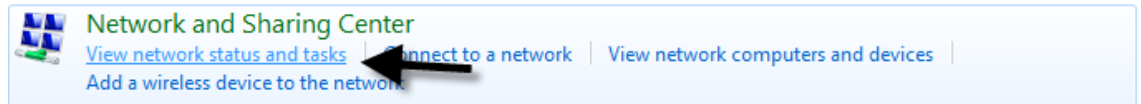➞   Select the button **Properties** at the bottom;

➞   Select **Internet Protocol Version 4 (TCP/IPv4)**;
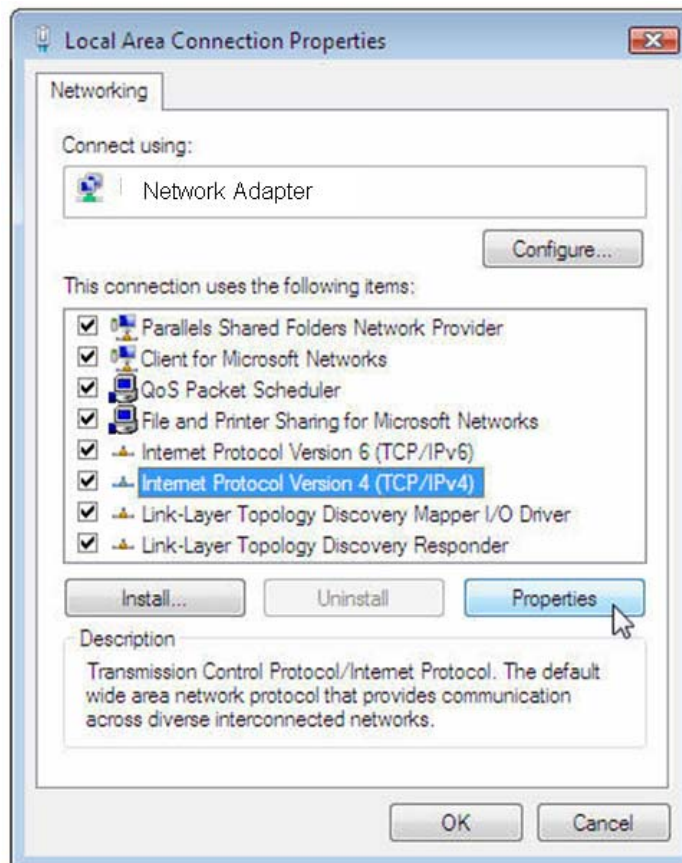
➞   Select **Properties**;

➞   Make sure **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected;

version 3.0
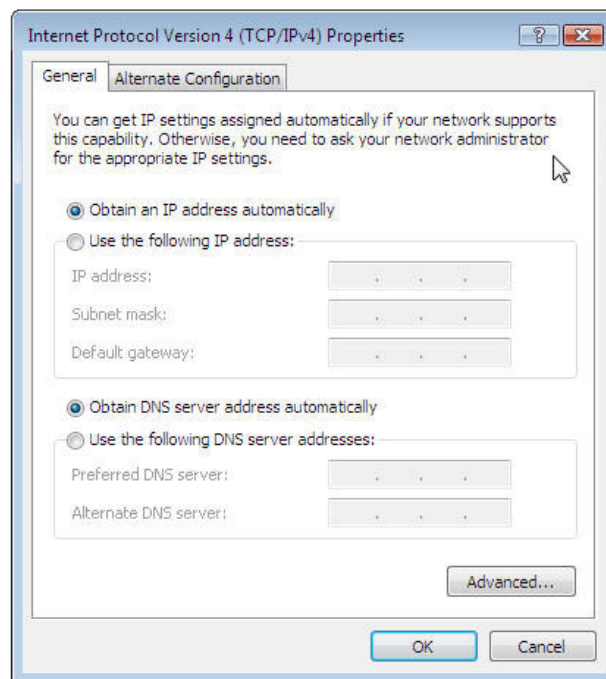
> ➢ Click the **OK** button.

5.3   Windows XP

> ➢ Open the **Start Menu** and select **Control Panel**;
> ➢ Open the **Network Connections** window;
> ➢ Right click on the active LAN connection and select **Properties;**
>
>   The **Local Area Connections Properties dialogue** will open.
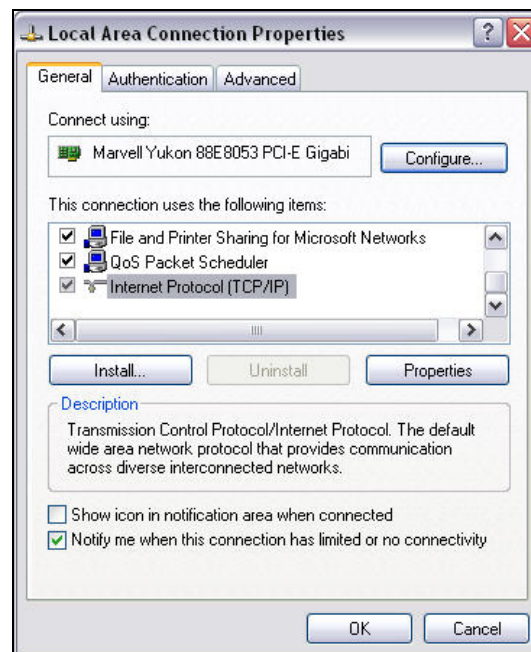
> ➢ Select the tab **General**;

> ➢ Scroll down the items and select **Internet Protocol (TCP/IP)**;

> ➢ Click the **Properties** button;

> The **Internet Protocol (TCP/IP) Properties dialogue** will open. By default, the dialogue is set as shown below.

version 3.0
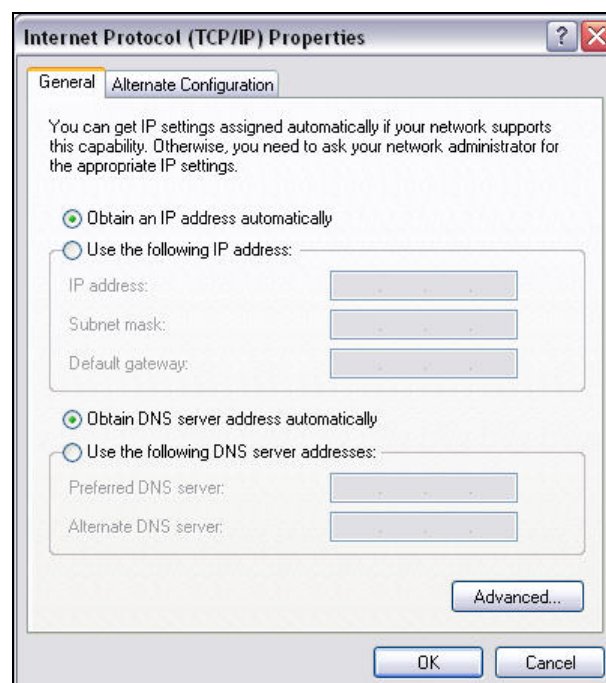
➢ Select the tab **General**;

If the radio button **Obtain an IP address automatically** is selected, your computer is able to receive an IP address.

If the radio button **Obtain an IP address automatically** is not selected:

➢ Select the radio button **Obtain an IP address automatically**;

➢ Click the **OK** button.

Your computer will now be able to accept an IP address from the IPmodem.

5.4 Mac OS X

➢ Click on your **Apple** menu and choose **System Preferences**:
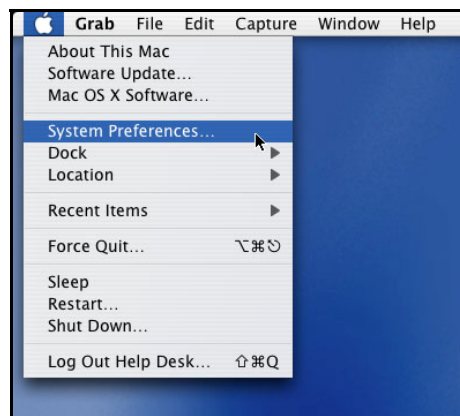
➢ Double-click on the **Network** icon;

➢ Click on the adapter that you wish to change (usually *Built-in Ethernet*) and then click the **Configure...** button;

version 3.0
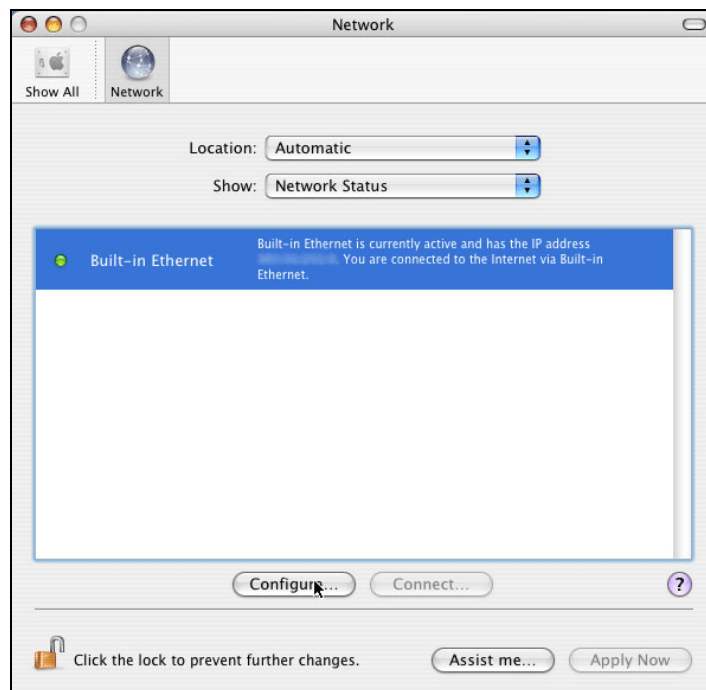
➢ Go to the **TCP/IP** tab. If your computer is configured to use a dynamic IP address, you should see a screen such as the one below (notice **Using DHCP** in the drop-down box next to **Configure**);
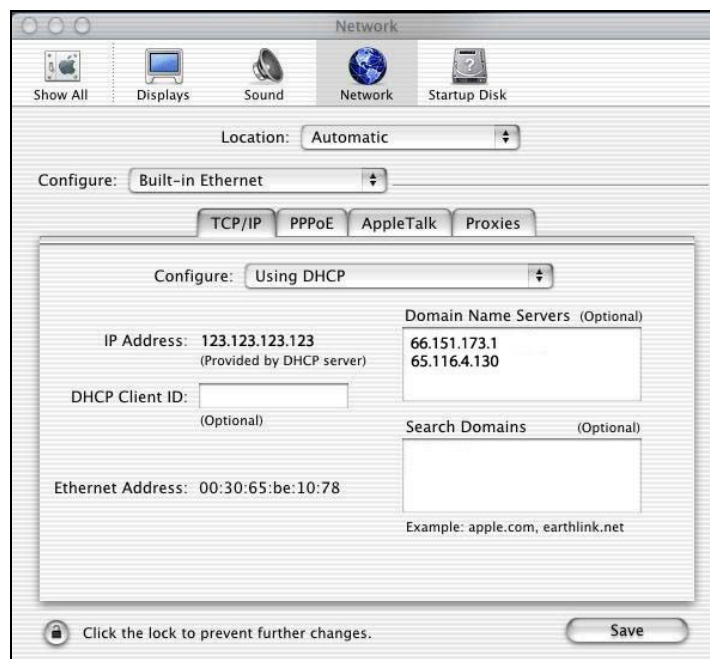
➢ This is where you can change your DNS settings, by entering the appropriate DNS servers in the **Domain Name Servers (Optional)** box;

➢ If not already selected, select **Using DHCP** from the drop down box called **Configure** in the **TCP/IP** tab. You should get a screen shot as above;

➢ Apply your settings by clicking the **Save** button.

version 3.0

6 APPENDIX C – TROUBLESHOOTING GUIDE

We would appreciate any useful feedback that can help us to complete this section. The position of the LEDs described in the Problem indication column is described in section 3.5.

Error Code	Problem indication	Possible solution
	No connectivity with IPmodem web interface. LED error indication: The Rx indicator LED is off The Warning LED is orange	The IPmodem has no connectivity with the satellite network (section 3.2.2). Check if the computer can receive an IP address via DHCP, as described in Appendix B – Setting and Changing your IP Settings Setup Manual for the Satellite Terminal. If the computer can receive an IP address: unplug the Ethernet cable from your computer, wait for more than three minutes and plug the Ethernet cable in again.
001	Web interface error info: Modem State : Awaiting installer action Modem LED is red	Your antenna is not pointed. Consult the Point&Play Setup Manual for the Satellite Terminal to execute the pointing process.
	Web interface error info: Modem State : antenna pointing	Your modem is currently in the pointing state. Consult the Point&Play Setup Manual for the Satellite Terminal to execute the pointing process.
010	Web interface error info: No demodulator lock Modem LED is red LED error indication: The RX indicator LED is off	Error in handling of the Rx signal. The Rx demodulator cannot lock. Verify the pointing of the antenna. Verify the connectivity between the IPmodem and the antenna. Verify the configuration of the satellite interface: frequency, polarisation, symbol rate…
020	Web interface error info: Terminal specific forward carrier lookup is ongoing LED error indication: Warning LED is on, RX LED is on	The modem is determining on which traffic carrier it is provisioned. If the message does not disappear within 10 minutes, reset the modem (section 3.4). If the error is still occurring after a number of hours, contact your ISP: - to report the problem; - to check if your IPmodem is provisioned in the network.

version 3.0

Error Code	Problem indication	Possible solution
030	Error information in the web interface: Network lookup failed LED error indication: Warning LED is on, RX LED is on	If the IPmodem could not login to the satellite network, maybe the result of pointing to a wrong satellite. Verify the configuration of the satellite interface: If the pointing data is correct, check if the antenna is pointed correctly. Re-point if necessary. Reset the IPmodem. Contact the ISP (Internet Service Provider) if this error is persistent for more than four hours.
040	Error information in the web interface: Synchronisation process failed LED error indication: Warning LED is on, RX LED is on	The time synchronisation process failed. Reset the IPmodem (section 3.4). Contact your ISP if this error is persistent for more than four hours. The error can be an indication of a general network problem.
045	Error information in the web interface: Synchronisation lost LED error indication: Warning LED is on, RX LED is on	The time synchronisation is lost. Reset the IPmodem (section 3.4). Contact your ISP if this error is persistent for more than four hours. The error can be an indication of a general network problem.
050	Error information in the web interface: Network login failed: Error information on the IPmodem: LED error indication: Warning LED is on, RX LED is on.	The IPmodem could not login to the satellite Verify if the TX cable is correctly connected. If the TX cable is correctly connected and the error is still occurring after a number of hours, contact your ISP : - to report the problem; - to check if your IPmodem is provisioned in the network.
055	Error information in the web interface: Network Layer configuration failed LED error indication: Warning LED is on, RX LED is on	An error occurred during the configuration of the network layers after a valid satellite network login. Reset the IPmodem (section 3.4). Contact your ISP if this error persists, and provide them with any additional error information displayed.
060	Error information in the web interface: TCP acceleration service failed LED error indication: Warning LED is on, RX LED is on	An error is detected in the TCP acceleration service. Reset the IPmodem (section 3.4) Contact your ISP if this error is persistent for more than four hours.

Error Code	Problem indication	Possible solution
070	Error information in the web interface: Network connectivity lost LED error indication: Warning LED is on, RX LED is on	The connectivity with the satellite network is lost. Reset the IPmodem. Reset the IPmodem (section 3.4) Contact your ISP if this error is persistent for more than four hours.
080	Error information in the web interface: ACM terminal can not login onto CCM hub.	The terminal software is not compatible with the satellite network. Contact your ISP.
081	Error information in the web interface: CCM terminal can not login onto ACM hub.	The terminal software is not compatible with the satellite network. Contact your ISP.
999	Error information in the web interface: Installation carrier setup failed LED error indication: Warning LED is on, RX LED is on	The activation of the installation carrier test mode failed because the terminal was not in the correct state.

Table 18 – Troubleshooting Table

version 3.0

7 APPENDIX D – ACRONYMS

Acronym / term	Description
8PSK	8 Phase Shift Keying
AC	Alternating Current
ACS	Access Control Server
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
BER	Bit Error Rate
C/N	Carrier to Noise ratio
CCM	Constant Coding Modulation
CE approved	Conformité Européenne (European health & safety product label)
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DVB	Digital Video Broadcasting
DVB-RCS	Digital Video Broadcasting – Return Channel Satellite
DVB-S, DVB-S2	Digital Video Broadcasting over Satellite (2)
EIRP	Effective Isotropic Radiated Power
EN	ETSI Norm
FCT	Frame Composition Table
FEC	Forward Error Correction
FTP	File Transfer Protocol
GMSK	Gaussian Minimum Shift Keying
G/T	Antenna Gain-to-System Noise Temperature Ratio
GUI	Graphical User Interface
HTTP	Hyper Text Transfer Protocol
ICMP	Internet Control Message Protocol
IEEE	Institute of Electrical and Electronics Engineers
iLNB	Interactive Low Noise Block-down converter
IP	Internet Protocol
ISP	Internet Service Provider
IT	Information Technology
LAN	Local Area Network
LED	Light Emitting Diode

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Acronym / term	Description
LNB (iLNB)	Low Noise Block-down converter
MAC address	Medium Access Control
MF-TDMA	Multi Frequency Time Division Multiple Access
MPEG	Moving Picture Experts Group
NCR	Network Clock Reference
NIT	Network Information Table
Nm	Newton metre
ODU	Outdoor Unit
PAT	Program Association Table
PMT	Program Map Table
QPSK	Quadrature Phase Shift Keying
RCS	Return Channel Satellite
RF	Radio Frequency
RFC	Request for Comments
RMT	RCS Map Table
RT	Reporting Tool
Rx	Receive
SAP	Satellite Access Provider
SCT	Superframe Composition Table
SDT	Service Descriptor Table
SEMS	Satellite Earth Station Management System
TBTP	Time Burst Time Plan
TCP (TCP/IP)	Transmission Control Protocol
TCT	Time Composition Table
TMS	Terminal Management System
TS	Transport Stream
Tx	Transfer
UDP	User Datagram Protocol
VAC	Volts, Alternating Current
VSAT	Very Small Aperture Terminal
WCT	Waveform Composition Table

Table 19 – Acronyms

version 3.0

8 APPENDIX E – LICENSES

GNU software is used in this product:

📋	You can download GNU Wget from the following location: http://www.gnu.org/software/wget/

📋	For more information about GPL: check out our website at http://www.newtec.eu/index.php?id=gpl

version 3.0

9 APPENDIX F – TERMINAL SPECIFICATIONS

9.1   IPmodem (indoor unit)

Performance

- IP data Throughput   : up-to 7 Mbps IP forward
                                    up-to 626 kbps IP return
- Max. download rate multicast : 16 Mbps total multicast IP rate
- Max. concurrent multicasts   : 10
- Simultaneous TCP sessions   : 100

Interface

- RF in (from iLNB)
    - Frequency   : 950 – 2150 MHz
    - Connector   : F (female) – 75 Ohm
- RF out (to iLNB)
    - Frequency   : 2750 – 2900 MHz
    - Connector   : F (female) – 75 Ohm

Power Supply

- Power supply   : 15 V (external adaptor)
- Mains adaptor input   : 100-240 V AC – 0.9A
- Mains power consumption   : 30 W maximum

Environment

- Operational   : 0 to 40 °C
- Storage   : -10 to 60 °C
- Humidity   : 10 ~ 70% (non-condensing)

Dimensions

- W190 x D180 x H53 mm (including RF connectors)
- Weight : 0.5 kg

9.2   Coaxial cable

Electrical

- Frequency range   : 0.5 – 3.0 GHz
- Impedance   : 75 +/- 3 Ohm
- Attenuation   : < 18.0 dB @ 3000 MHz
- Return loss   : > 18 dB up to 2150 MHz, > 15 dB up to 3000 MHz
- Structural return loss : up to 3 peaks of > 15 dB over 0.5 – 3.0 GHz band

version 3.0

- Screening attenuation　　: > 85 dB up to 2150 MHz, > 75 dB up to 3000 MHz
- DC-Resistance　　　　　　: < 3 Ohm (inner+outer)
- Compliant to standards　: EN50117-2-4 and EN501117-2-5 (up to 3000 MHz)

Environment

- Ambient Temperature　　　　　　　　: -40 to +80 °C (operating & storage)
- Minimum Installation Temperature　: -5 °C
- Relative Humidity　　　　　　　　　　: 0 ~ 100 %
- Weather Protection　　　　　　　　　: IP67 – incl. Industrial & Coastal
- Solar Radiation　　　　　　　　　　　: 1120 W/m²

9.3　iLNB (outdoor unit)

Performance

- Receive characteristics
    - Gain　　　　　　　　　: 57 to 70 dB ± 0.5 dB / 10 °C
    - Spectrum conversion　: non-inverted
- Transmit characteristics
    - Output power　　　　　: + 27 dBm typ. for 500mW version (NTC/2530)
      　　　　　　　　　　　　　　+ 29 dBm typ. for 800mW version (NTC/2532)
    - Power stability　　　: ± 1.5 dB / 90 °C
    - Spectrum conversion　: non-inverted

Interface

- RF in (receive)
    - Frequency　　　　　: 10.7 – 12.75 GHz
    - Polarisation　　　　: physical mounting
- RF out (transmit)
    - Frequency　　　　　: 13.75 – 14.5 GHz (Ku-band)
    - Polarisation　　　　: linear and orthogonal to Rx

Environment

- Ambient Temperature　: -30 to +60 °C
- Weather Protection　　: IP67
- Humidity　　　　　　　: 0 ~ 100% (condensing)
- Solar Radiation　　　　: 500 W/m² maximum
- Rain　　　　　　　　　: < 40 mm/h
- Wind Load　　　　　　: < 80 km/h no deterioration
- Wind Load (survival)　: < 180 km/h

version 3.0

9.4   Antenna

Environment

- Ambient Temperature   : -30 to +60 °C
- Weather protection   : incl. Industrial & coastal
- Relative Humidity   : 0 ~100 %
- Solar Radiation   : 1120 W/m²
- Wind Load (operating[1])   : < 80 km/h (< 0.22° dev.TX)
- Wind Load (survival[2])   : < 180 km/h

Dimensions

- TP210 satellite terminal with 75cm antenna
  - Reflector Height   : 810 mm
  - Reflector Width   : 750 mm
  - Aperture   : 750 mm
  - Feed clamp   : 40 mm diameter
  - Elevation range   : 0 – 90 deg
  - Azimuth range   : 0 – 360 deg
  - Mast dimensions   : 45 – 70 mm (60 – 70 mm recommended)
  - Colour   : light grey – RAL 7037
  - Weight   : 10 kg

- TP211 satellite terminal with 1m antenna
  - Reflector Height   : 1127 mm
  - Reflector Width   : 1000 mm
  - Aperture   : 1000 mm
  - Feed clamp   : 40 mm diameter
  - Elevation range   : 13 – 90 deg
  - Azimuth range   : 0 – 360 deg
  - Mast dimensions   : 65 – 76 mm
  - Colour   : light grey – RAL 7037
  - Weight   : 17 kg

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[1] Operating: antenna remains operational with a maximum pointing degradation as indicated.

[2] Survival: the antenna will be degraded permanently, however no parts of the antenna will get loose.

version 3.0